J. Entomol. Res. Soc., 26(1): 27-31, 2024 ..... *Research Article*
Doi: 10.51963/jers.v26i1.2464 *Online ISSN:2651-3579*

First Confirmed Locality Record of Ladybird Beetle *Synona melanopepla* (Mulsant, 1850) (Coleoptera: Coccinellidae) from Nepal

Sushila BAJRACHARYA[1*] Suraj BARAL[1] Prakash GAUDEL[2]
Bimal Raj SHRESTHA[1]

[1]Biodiversity Research and Conservation Society, Kathmandu, NEPAL
[2]Central Department of Zoology, Institute of Science and Technology, Tribhuvan University, Kathmandu, NEPAL

e-mails: [1*]sushilabajracharya8@gmail.com; [1]baral.hector@gmail.com; [2]prakash.gaudel2@gmail.com; [1]rajsthbimal9@gmail.com

ORCID IDs:[1*]0000-0001-7916-6860 [1]0000-0002-6816-7355; [2]0000-0003-3749-3454; [1]0000-0001-7043-6553
*Corresponding author

ABSTRACT

Synona melanopepla (Mulsant, 1850) is a ladybird beetle belonging to the subfamily Coccinellinae of the family Coccinellidae. This species has been confirmed for the first time from Nepal through this study. A single specimen of this species was collected from Ranibari Community Forest, Kathmandu, Nepal.

Keywords: First record, Beetle, Coccinellidae, Ranibari Community Forest, Kathmandu

Bajracharya, S., Baral, S., Gaudel, P., & Shrestha, B.R. (2024). First Confirmed Locality Record of Ladybird Beetle *Synona melanopepla* (Mulsant, 1850) (Coleoptera: Coccinellidae) from Nepal *Journal of the Entomological Research Society*, 26(1), 27-31.

Received: May 05, 2023 *Accepted: March 08, 2024*

INTRODUCTION

All ladybird beetles belong to the family Coccinellidae of Order Coleoptera. This family is one of the most diversified beetle groups which comprises more than 375 genera (Nedvěd, 2015; Soares et al., 2021) and 6000 species (Vandenberg, 2002). Genus *Synona* is also a coccinellid beetle that consists of five species *S. philippinensis*, *S. melanaria*, *S. melanopepla*, *S. obscura*, and *S. consanguinea* from Oriental and Australasian regions (Poorani, Ślipiński, & Booth, 2008).

The genus *Synona* is considered as a potential predator that usually prey on nymphs of plataspid bug, specifically *Coptosoma ostensum* (Subramanyam, 1925), tessarotomid bug specifically *Cumare pallida*, (Afroze & Uddin, 1998; Monteith, 2006), psyllids, pentatomids (Poorani, 2008) and aphids (Poorani, 2023). It was synonymized with *Synona rougeti* (Mulsant, 1866), *Lemnia melanoptera* Iablokoff-Khnzorian, 1978, and *Lemnia (Synia) martini* Iablokoff-Khnzorian, 1984 (Poorani et al., 2008). *Synona melanopepla* (Mulsant, 1850) was originally described from the East Indies as *Synia melanopepla*. The species was found previously distributed only in five different countries; India (Mulsant, 1850), Vietnam (Poorani et al., 2008), and Bhutan (Dorji, Loday, & Vorst, 2019), Srilanka, and China (Poorani, 2023). Poorani (2023) enlists Nepal as a distributional range of the species but without any confirmed locality in the country.

MATERIALS AND METHODS

Study Area and Sampling

As a part of the biodiversity survey in the remnant forest patches of Kathmandu valley, study was conducted in the Ranibari Community Forest (RCF) Kathmandu. The forest lies at an altitude of 1330 m asl and geographically stands at 27° 43' 50.94" N latitude and 85° 19' 15.77" E longitude (Fig. 1) which comprises a total area of 9.5 hectares. The forest is dominated by mixed vegetation like Bamboo, *Castano-psis indica*, *Ficus lacor*, *Pinus roxburghii*, *Melia azedarach*, *Quercus glauca*, *Ziziphus incurva*, *Engelhardia spicata*, and *Schima wallichii*. The survey was conducted by establishing three systematic plots each of 10m X 10m as a lattice grid within 200 m intervals between two consecutive plots in the forest. During the survey periods, three sampling techniques were extensively used that includes beating (McCravy, 2018), Handpicking (Gobbi et al., 2018) and Pitfall traps (Pompeo, Oliveira Filho, Klauberg Filho, Mafra, & Baretta, 2020).

Collection, Preservation and Identification:

The survey was conducted in October 2021. The species was collected following hand-picking method and immediately transferred into the killing jar containing ethyl acetate soaked with a cotton cloth. The collected specimen was taken in the Entomological Laboratory of the Central Department of Zoology, Tribhuvan University for the detailed taxonomic study. The specimen was carefully studied under the

stereo-microscope model BEL-3020b (10X4.5). The confirmation of the species was made following identification features by using Poorani et al. (2008). After completing identification, the specimen of the species was photographed (Dorsal and Ventral View), and safely preserved in the Central Department Zoology Museum of Tribhuvan University, Kathmandu, Nepal with systematic labelling (catalogue number: CDZMTU-COL20).

RESULT

A single notable individual of the species of beetle from the study site. The species was confirmed as *Synona melanopepla* which was the first confirmed locality record for Nepal. This species was encountered only once, from an undisturbed second plot through out the survey (Fig. 1).

Synona melanopepla (Mulsant, 1850)

Body size: 7.18 mm in length and 6 mm in width (Fig. 2). Body circular and hemispherical. Head dark orange. Anterior clypeal border semicircular. Pronotum dark yellow-orange with median black marking. Scutellum and elytra black and glabrous. Antenna yellowish brown with the last antennomere darker and wedge shaped. Pronotal punctures large and dense. Punctures in elytra finer and widely placed as compared to pronotal punctures. Elytra has several coarse and deeply pitted punctures on an anterolateral areas which is distinguishing morphological character from similar looking *S. melanaria* in which coarse punctures are not present in anterolateral areas. Ventral side brownish with black elytral epipleura. Prosternal intercoxal process with subparallel carina reaching up to middle of prosternum. The sexes of the species was not separated.

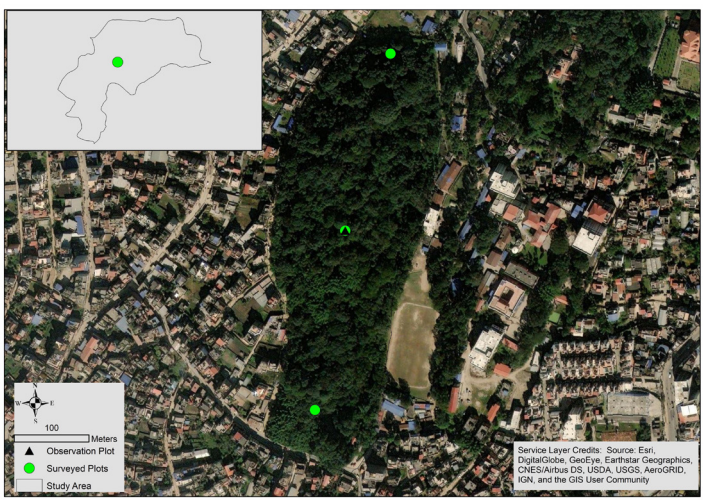

Figure 1. Map showing study plots with beetle observation plot.

Figure 2. *Synona melanopepla* (Mulsant). a) dorsal view,b) ventral view (scale bar- 1mm).

DISCUSSION

This species is commonly distributed in neighbouring India and other adjacent countries. Nepal is located near Assam, Bihar, and Uttar Pradesh in northern India, where *S. melanopepla* is found. This study highlights the current new habitat and range extension of the species. This species feeds on pests which are also known to occur in Nepal viz. *Coptosoma* (Westwood, 1837), *Megacopta cribraria* (CABI, 2022), psyllids, pentatomids, and aphids. The presence of *Ficus* sp. plant in RCF may also support the existence of this species which was documented predating psyllids on *Ficus* sp. by Poorani (2008). This shows the possibility of this species being native to Nepal.

ACKNOWLEDGEMENTS

The authors are very thankful to the Department of Forest and Soil Conservation, Babarmahal, Kathmandu for granting the research and collection permission to the project and Central Department of Zoology for allowing us to use the laboratory. We would also like to thank Dr. Janakiraman Poorani for guidance and confirmation of species.

REFERENCES

Afroze, S. & Uddin, S. (1998). Bioecology of *Synia melanaria* Mulsant (Coleoptera: Coccinellidae), predating on *Coptosoma ostensum* Distant. *Journal of Entomological Research,* 22(4), 329-336.

Dorji, C., Loday, P., & Vorst, O. (2019). A preliminary checklist of the Coccinellidae of Bhutan (Insecta: Coleoptera). *Zootaxa,* 4712(4), 497-530. doi: 10.11646/zootaxa.4712.4.2

Gobbi, M., Barragán, Á., Brambilla, M., Moreno, E., Pruna, W., & Moret, P. (2018). Hand searching versus pitfall trapping: how to assess biodiversity of ground beetles (Coleoptera: Carabidae) in high altitude equatorial Andes? *Journal of Insect Conservation,* 22(3-4), 533-543. doi: 10.1007/s10841-018-0082-8

McCravy, K.W. (2018). A Review of Sampling and Monitoring Methods for Beneficial Arthropods in Agroecosystems. *Insects,* 9(4). doi: 10.3390/insects9040170

Megacopta cribraria. (2022). *CABI Compendium*. https://doi.org/10.1079/cabicompendium.33720

Monteith, G.B. (2006). *Maternal care in Australian oncomerine shield bugs (Insecta, Heteroptera, Tessaratomidae)*. *Denisia,* 19, 1135-1152

Mulsant, M.E. (1850). Species des Coléoptères trimères sécuripalpes. *Annales des Sciences Physiques Naturelles, d' Agriculture et d' Industrie, Lyon.,* 2, 1-1104.

Nedvěd, O. (2015). *Ladybird Beetles (Coccinellidae) of Central Europe*. *Academia, Praha*.

Pompeo, P.N., Oliveira Filho, L.C.I.D., Klauberg, Filho, O., Mafra, Á.L., & Baretta, D. (2020). Coleoptera Diversity and Soil Properties in Land Use Systems. *Floresta e Ambiente,* 27(3). doi: 10.1590/2179-8087.006818

Poorani J. (2023). An illustrated guide to the lady beetles (Coleoptera: Coccinellidae) of the Indian Subcontinent. Part II. Tribe Chilocorini. *Zootaxa*, 5378(1):1-108. doi: 10.11646/zootaxa.5378.1.1.

Poorani, J., Ślipiński, A., & Booth, R.G. (2008). A Revision of the Genus *Synona* Pope, 1989 (Coleoptera: Coccinellidae: Coccinellini). *Annales Zoologici,* 58(3), 579-594. doi: 10.3161/000345408x364427

Soares, A.O., Calado, H.R., Franco, J.C., Aguiar, A.F., Andrade, M.M., Zina, V., Ameixa, O.M.C.C., Borges, I., & Magro, A. (2021). An annotated checklist of ladybeetle species (Coleoptera, Coccinellidae) of Portugal, including the Azores and Madeira Archipelagos. *Zookeys,* 1053, 107-144. doi: 10.3897/zookeys.1053.64268

Subramanyam, T. (1925). *Coptosoma ostensum* Dist. and its enemy *Synia melanaria* Muls. *Journal of the Bombay Natural History Society,* 30, 924-925.

Vandenberg, N. (2002). Coccinellidae Latreille 1807. *American Beetles,* 2, 371-389.

Westwood, J.O. (1837). A Catalogue of Hemiptera in the Collection of the Rev. FW Hope, with short Latin Descriptions of New Species. *A Catalogue of Hemiptera in the Collection of the Rev. FW Hope, with short Latin Descriptions of New Species.*